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09/591,026	06/09/2000	Gerd Vandersteen	IMEC211.001A	2576

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FERRIS III, FRED O

ART UNIT	PAPER NUMBER
2128	6

DATE MAILED: 02/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>09 June 2000</u>.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-13</u> is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) <u>1-13</u> is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on <u>09 June 2000</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.
   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a)☐ All   b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date <u>4,5</u>. ✓
4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____ .

DETAILED ACTION

1.   *Claims 1-13 have been presented for examination. Claims 1-13 have*

been rejected by the examiner.

Drawings

2.   *The drawings are objected to because of poor character of lines, numbers,*

and letters (37 CFR 1.84(i)) in Figures 1-27. A proposed drawing correction or

corrected drawings are required in reply to the Office action to avoid

abandonment of the application. The objection to the drawings will not be held in

abeyance.

Priority

3.   *An application in which the benefits of an earlier application are desired*

must contain a specific reference to the prior application(s) in the first sentence of

the specification of in an application data sheet (37 CFR 1.78(a)(2) and (a)(5))

and must include the relationship (i.e., continuation, divisional, or continuation-in-

part) between the applications except when the reference is to a prior application

of a CPA assigned the same application number. While applicants have made

reference to two U.S. Provisional applications, the application serial number of

the 1 June 2000 filing has been omitted. For purposes of art rejections the

examiner has used the earliest claimed priority date of 10, June 1999.

Specification

4.   The disclosure is objected to because it contains an embedded hyperlink

and/or other form of browser-executable code. Applicant is required to delete the

embedded hyperlink and/or other form of browser-executable code. See MPEP §

608.01.

It is noted that a reader of any potentially issued patent would be referred

to a different effective disclosure (referred to by the websites) depending on

when they were to read the patent, because the websites and their contents are

subject to change. Therefore, the "state of the art", as defined in the specification,

would effectively depend on the date the patent were to be reviewed.

Furthermore, the listing of references in the specification is not a proper

information disclosure statement. 37 CFR 1.98(b) requires a list of all patents,

publications, or other information submitted for consideration by the Office, and

MPEP § 609 A(1) states, "the list may not be incorporated into the specification

but must be submitted in a separate paper." Therefore, unless the references

have been cited by the examiner on form PTO-892, they have not been

considered.

Information Disclosure Statement

5.   The disclosure references an embedded hyperlink and/or other form of

browser-executable code. The listing of references in the specification is not a

proper information disclosure statement. 37 CFR 1.98(b) requires a list of all

patents, publications, or other information submitted for consideration by the

Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Objections

6.   *Claims 1-13 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The preamble of independent claim 1 is does not clearly define the claim as being either only a method or only an apparatus claim and is therefor indefinite. Subsequently, Claim 2, for example, does not further limit claim 1 since it refers to the "method recited in 1, wherein said system being an essentially electrical system". Further, all of the dependent claims merely refer to a number, and not specifically to the independent claim, i.e. the method of "1", for example, instead of simply "claim 1".*

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7.   **Claims 1-13 are rejected under 35 U.S.C. 101 because the claimed**

invention to non-statutory subject matter.

Specifically, claims 1-13 mix statutory classes. Independent claim 1, for

example, is a <u>method claim</u> that also recites an <u>apparatus</u> (system) limitation. A

single claim which claims both an apparatus and the method steps of using the

apparatus is indefinite under 35 U.S.C. 112, second paragraph. In Ex parte Lyell,

17 USPQ2d 1548 (Bd. Pat. App. & Inter. 1990), a claim directed to an automatic

transmission workstand and the method steps of using it was held to be

ambiguous and properly rejected under 35 U.S.C. 112, second paragraph. Such

claims should also be rejected under 35 U.S.C. 101 based on the theory that the

claim is directed to neither a process nor a machine, but rather embraces or

overlaps two different statutory classes of invention set forth in 35 U.S.C. 101

which is drafted so as to set forth the statutory classes of invention in the

alternative only. Id. at 1551.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8.   Claims 1-13 rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention.

Claims 1-13 mix statutory classes. Independent claim 1, for example, is a

<u>method claim</u> that also recites an <u>apparatus</u> (system) limitation. A single claim

which claims both an apparatus and the method steps of using the apparatus is

indefinite under 35 U.S.C. 112, second paragraph. In Ex parte Lyell, 17 USPQ2d

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properly rejected under 35 U.S.C. 112, second paragraph. Such claims should

also be rejected under 35 U.S.C. 101 based on the theory that the claim is

directed to neither a process nor a machine, but rather embraces or overlaps two

different statutory classes of invention set forth in 35 U.S.C. 101 which is drafted

so as to set forth the statutory classes of invention in the alternative only. Id. at

1551.

Claim Interpretation

9.   *The disclosure was objected to because it contains an embedded*

hyperlink and/or other form of browser-executable code. It was noted that a

reader of any potentially issued patent would be referred to a different effective

disclosure (referred to by the websites) depending on when they were to read the

patent, because the websites and their contents are subject to change.

Therefore, the "state of the art", as defined in the specification, would effectively

depend on the date the patent were to be reviewed.

Furthermore, the listing of references in the specification is not a proper

information disclosure statement. 37 CFR 1.98(b) requires a list of all patents,

publications, or other information submitted for consideration by the Office, and

MPEP § 609 A(1) states, "the list may not be incorporated into the specification

but must be submitted in a separate paper." Therefore, unless the references

have been cited by the examiner on form PTO-892, they have not been

considered.

Therefore, these non-incorporated references are not considered part of

the specification, as it applies to the claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1,

148 USPQ 459 (1966), that are applied for establishing a background for

determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. **Claims 1-13 are rejected under 35 U.S.C. 103(a) as being**

unpatentable over "MATLAB Version 5.2", The Math Works, January 1998

in view of "Efficient Simulation of Multi-Carrier Digital Communications

Systems in Nonlinear Environments", K. Schneider, IEEE Military

Communications Conference, pp. 339-344, October 1992 (of record) or

"Novel Adaptive Linearization Scheme for Multi-Carrier Power Amplifiers using Samples of Multi Channels (SMC)", M. Yan, IEEE Vehicular Technology Conference, pp. 1084-1088, May 1999.

<u>Independent claim 1 is drawn to</u>:

Method for digitally simulating signals comprising subsystems and connections:
  Signals represent one of (at least) two carriers
    Each modulated by a bandpass signal
  Bandpass signals have different bandwidth

<u>Per independent claims 1 and 11</u>: *MATLAB teaches an interactive system for digital modeling and simulation of signals and systems including means for entering the representation of the simulated system, means for transforming the model into a graph with nodes, programmable rule computation, and a scheduler for controlling (determining) the execution times. MATLAB provides block (subsystem) simulation and modeling of communications, signal processing and power systems including linear, nonlinear, continuous-time, discrete time, multivariable, and multi-rate systems. (Introduction, Chapters 1, 2, especially pages 1-3, 1-8 and 1-9)*

MATLAB does not explicitly teach signals representing carriers modulated by a bandpass signal.

Both Schneider and Yah teach techniques for the simulation of multi-carrier systems including bandpass signal modulation and signals having different bandwidths. Both Schneider and Yah further disclose the simulation of subsystems having connections and nodes combining the bandpass signals of

multiple carriers. (Schneider: Abstract, Introduction, Sections I-IV, Figs. 1-5, Yah:

Abstract, Introduction, Sections I-V, Figs. 1-6)

It would have been obvious to one having ordinary skill in the art at the

time the claimed invention was made to modify the teachings of MATLAB relating

to the digital modeling and simulation of signals and systems for

communications, signal processing and power systems including linear,

nonlinear, continuous-time, discrete time, multivariable, and multi-rate systems,

with the teachings of either Schneider or Yah relating to the simulation of multi-

carrier systems including bandpass signal modulation, to realize the claimed

invention. An obvious motivation exists since this area of technology is highly

competitive with a well-known need for improved simulation of multi-carrier digital

communication systems in the market place, and large amounts of money being

spent in product development and improvement. (See Schneider Section VI, for

example) Accordingly, a skilled artisan would have made an effort to become

aware of what capabilities had already been developed in the market place and,

hence, would have been motivated to modify the teachings of MATLAB with the

teachings of either Schneider or Yah in order to reduce development time and

cost.

Per dependent claims 2-10, 12, and 13: This group of claims merely

includes limitations drawn to the signals representing the sum of carriers,

computation rules, computation nodes, and nonlinear system computations and

are hence rejected as previously cited above.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11.   Claims 1-10 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by U.S. Patent 6,181,754 issued to Chen.

Per claims 1-10: Chen discloses a method and system for digital simulation modeling of mixed signal circuits comprising subsystems with connections where signals represent multiple carriers modulated by bandpass signals having different bandwidths. (Abstract, Summary of Invention, CL3-L49-65, CL4-L41-CL5-L18, CL5-L55-CL7-L15, CL8-L57-CL10-L25, Figs. 4-6, 11-12)

For example, at column 3, line 62 Chen recites:

"Linear models simulate linear distortion over a small
range of input amplitudes. A lone linear model does not exhibit gain
compression. Static models scale and rotate the complex base-band input signal
to generate base-band output. The complex plane is a convenient space for
representing base-band signals because one carrier has two phases and each
phase can be modulated independently. If the degree of scaling and rotation
depends on the magnitude of the input base-band signal, the static model is
non-linear. Static non-linear models capture uniform gain compression and
static am-pm conversion but not linear distortion."

12.   Claims 1-10 are also rejected under 35 U.S.C. 102(e) as being clearly

anticipated by U.S. Patent 6,263,027 issued to Yang et al.

Per claims 1-10: Yang discloses a method and system for modeling of

mixed signal circuits comprising subsystems with connections where signals

represent multiple carriers modulated by bandpass signals having different

bandwidths and signal simulation. (Abstract, Summary of Invention, CL4-L13-57,

CL5-L39-65, CL8-L43-67, Figs. 1-5)

For example, at column 9, line 57 Yang recites:

> "the FIG. 5 embodiment is provided stored values from the memory device 70, corresponding
> to consecutive and alternating values of the first and <u>second carrier wave-forms, which simulates</u> the
> output of the second multiplexer 62 of the FIG. 4 embodiment."

Conclusion

13.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

U.S. Patent 6,606,588 issued to Schaumont et al teaches digital signal

simulation.

"Equalisation in a Multi-carrier Code Division Multiple Access Multi-Rate

System", L. Freiberg, IEEE 0-7803-3143-5, IEEE 1996, teaches multi-carrier

simulation.

"Performance of a Multi-rate CDMA Packet Data System", R. Walton,

IEEE 0-7803-4872-9/98, IEEE 1998, teaches multi-carrier simulation.
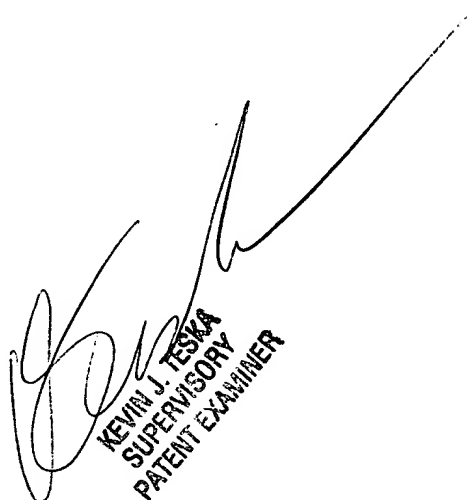
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred Ferris whose telephone number is 703-305-9670 and whose normal working hours are 8:30am to 5:00pm Monday to Friday.

Any inquiry of a general nature relating to the status of this application should be directed to the group receptionist whose telephone number is 703-305-3900.

The Official Fax Numbers are:

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